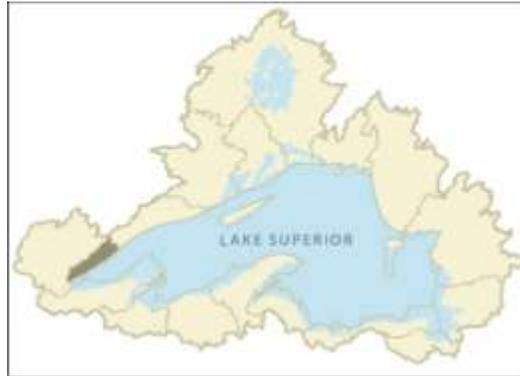


11. Beaver-Lester

Beaver – Lester Regional Plan

This is one of twenty Regional Plans that support implementation of the Lake Superior Biodiversity Conservation Strategy (Strategy). The Strategy, prepared and overseen by the Lake Superior Partnership, contains information and 62 sub-strategies to provide guidance to restoring and protecting biodiversity (www.natureconservancy.ca/superiorbca).

Regional Plans are intended to be adaptive documents which support and respond to local conservation efforts and contribute to lakewide biodiversity goals. To contribute an update to this Regional Plan, please contact superiorplans@glnpo.net



The Beaver-Lester regional unit extends from Silver Bay, Minnesota, south to Duluth, Minnesota. The region is largely forested with some fragmentation due to road infrastructure. There are long ridges that slope toward Lake

Superior with the Sawtooth Mountains found along the shoreline. Almost 94% of the Beaver-Lester regional unit landmass is forested, and agriculture and development account for less than 0.5% and 1.5% of the regional unit landmass, respectively. Natural cover in the coastal zone is over 87%. Less than 3% of the regional unit is in parks and protected areas, but in the coastal zone this percentage increases to over 11%. The coast is an Important Habitat Area, especially for Lake Trout and Whitefish, with characteristic rocky shores and cliffs and coastal wetlands concentrated near the Knife River. Many cold water tributaries in this region sustain Brook Trout. Knife Island is important for colonial nesting birds such as the Herring Gull and Double-crested Cormorant. The Beaver-Lester region, along with the Baptism-Brule unit, comprise 70% of Minnesota's natural nest sites for the Peregrine Falcon. This area also supports species of concern including Moose and Lynx. At least 96 species and communities of conservation concern have been documented in this regional unit, including Shortjaw Cisco and Wood Turtle.^{1,2}

¹ Data included here were provided by the Division of Ecological and Water Resources, Minnesota Department of Natural Resources (DNR), and were current as of December 3, 2014. These data are not based on an exhaustive inventory of the state. The lack of data for any geographic area should not be construed to mean that no significant features are present.

²For a full list of the species and communities documented in the regional unit please see the corresponding [regional unit chapter](#) in Vol. 2 of the Lake Superior Biodiversity Conservation Assessment.

Report Card ³		Overall Grade: C
Conservation Target	Grade	Conservation Target Notes
Nearshore	D	Important habitat areas for Lake Trout and Lake Whitefish are found in several locations along the coast, including between Duluth and Two Harbors. Threats to these habitats include sedimentation, coastal development, and aquatic invasive species (AIS). The port of Two Harbors is at high risk for invasion by AIS due to ballast water from high freighter traffic.
Embayments & Inshore	D	The St. Louis River is a designated Area of Concern (AOC) with beneficial use impairments that include degradation of fish and wildlife habitat, fish and wildlife populations, and benthos. Heavy industrial use has resulted in contaminated sediments and hardened shorelines.
Islands	A	Knife Island is an important island for colonial nesting waterbirds such as the Herring Gull and Double-crested Cormorant.
Coastal Wetlands	C	Erosion, water quality (mercury, pH, dissolved oxygen, <i>E-coli</i> , turbidity) and quantity, shorelines, woodlands, stormwater, and wetlands are noted in the Rapid Watershed Assessment as the main resource concerns in this regional unit.
Coastal Terrestrial	A	Some local experts feel a grade of B may more accurately reflect local conditions due to the area being heavily dominated by a young forest of aspen and birch, and missing conifers and older age classes. It has also been fragmented by development near the shore.
Tributaries & Watersheds	C	A number of waterbodies within the regional unit are listed as impaired. Impairments include high mercury, low pH, high turbidity, low dissolved oxygen, and <i>E. coli</i> . Although much of the watershed is characterized by forests, it is considered highly fragmented by roads.

Conservation Opportunities

The port of Two Harbors has been identified as a site at high risk for introduction of aquatic invasive species (AIS) due to ballast water discharge from freighter traffic. Prevention of AIS introductions from ballast water is a high priority; 35% of all known AIS introductions have come from ballast water. Continued efforts to effectively control and eradicate established AIS is beneficial to native species biodiversity and reintroduction. A portion of the St. Louis River Area of Concern (AOC) is located in the region. The lower 39 miles of the St. Louis River was designated as an AOC due to habitat loss or degradation and contamination caused by industrial pollution. Remediation of habitat loss/degradation and pollution in the watershed will ensure a high level of biodiversity of species, especially migratory birds. The region includes a number of waterbodies that are listed as impaired. Impairments include

³ Report Card grades are intended to denote relative (within Lake Superior basin) condition/health and stresses for each biodiversity target in the region based on available condition and stress indices. A more detailed explanation and expert comments on grades are available in the Lake Superior Biodiversity Conservation Assessment - Volume 2: Regional Unit Summaries.

should continue to be implemented. A list of existing plans relevant to the next steps presented below is presented at the end of this document.

Regional Plan Next Steps

There is some variation among Regional Plans in how future actions from existing plans were incorporated into this document, based on advice from the implementers of those plans in the region. Similarly, implementation approaches vary greatly among regional units. The Lake Superior Partnership serves an important role in facilitating cooperation among agencies to support on-the-ground action. Priority implementation actions developed through the Partnership are identified in the Lake Superior LAMP, Lake Partnership committee work plans, and agency specific action plans.

Regional Objective	Next Step	Conservation Target	Primary Lakewide Strategy ⁱ
Lakewide Strategy 1: Restore and protect a system of representative, high quality habitats.			
<i>Common Actions For All Region Plans</i> Maintain or enhance areas where large blocks of land with natural cover exist or could be expanded. Preserve sites that have high species diversity and/or critical habitat for fish or wildlife.		Multiple	1.1
Protect habitats of biological significance by designating them as Scientific and Natural Areas.	Use Minnesota Biological Survey (MBS) Ecological Evaluations recommendations to prompt legislative action to establish firm targets for Scientific and Natural Area designations.	Multiple	1.6
Protect the habitats of biological significance with special consideration of ephemeral and headwater wetlands.	Implement management to protect and prevent further degradation of wetlands.	Multiple	1.1
Restore the habitats of biological significance in the St. Louis River Estuary that will lead to delisting as an Area of Concern.	Seek additional funding and implement projects identified in the delisting framework.	Multiple	1.3
Increase people’s awareness of and challenges to conserving critical aspects of Lake Superior’s biodiversity, including the importance of biodiversity, threats, on-going restoration projects, and opportunities for improving biodiversity in their region.	Engage in novel approaches to increase awareness and protect biodiversity such as crowd source data collection, a people's charter to protect the Great Lakes, and grass roots programs to support healthy landscapes.	Multiple	1.8

Regional Objective	Next Step	Conservation Target	Primary Lakewide Strategy ⁱ
Protect the habitats of biological significance through implementation of ecological silviculture.	Restore missing species, increase patch sizes, improve stand diversity using silviculture, and account for amount of young forests per watershed in timber harvest plans.	Multiple	1.3
Protect the habitats of biological significance by working with the cities and counties in the region to protect the tax forfeit lands.	Prioritize natural areas and enter them into protective status.	Coastal Terrestrial	1.6
Land management agencies develop a common forestry inventory for the Beaver-Lester region.	Standardize forestry inventory data amongst agencies in the region and have a central database to store data for public access.	Coastal Terrestrial	1.12
Gain a greater understanding of biodiversity as it relates to cultural tradition and identity.	Educate the public, legislators, and regulatory agencies about treaty rights in the 1854 Ceded Territory and reservations to ensure management decisions consider treaty rights and that natural resources are cultural resources.	Multiple	1.8
Restore habitats of biological significance with special consideration for wetland restoration in the Beaver-Lester region.	Develop tools that identify and prioritize wetland restoration and remediation.	Multiple	1.11
	Utilize the Lake Superior Framework for Assessment of Wetland Services report to focus restoration efforts in identified restorable wetland locations.	Tributaries & Watersheds	1.11
Increase people’s awareness of environmentally sound best management practices in land use change and development throughout the basin.	Engage residents seeking development especially near-shore and on/close to water features.	Coastal Terrestrial	1.8
Foster a greater understanding of the connections between terrestrial land management and Lake Superior health.	Target outreach to the timber industry, loggers, and forest management agencies and explore opportunities for public engagement with forest management plan review.	Coastal Terrestrial	1.8
Lakewide Strategy 2: Manage plants and animals in a manner that ensures diverse, healthy and self-sustaining populations.			
<i>Common Actions For All Region Plans</i> Review lists of regional species of conservation concern and identify gaps in monitoring, planning, and related conservation actions.		Multiple	2.7

Regional Objective	Next Step	Conservation Target	Primary Lakewide Strategy ⁱ
Achieve and maintain genetically diverse self-sustaining populations of Lake Trout that are similar to those found in the lake prior to 1940.	Conduct annual survey(s) to determine Lake Trout population status and trends.	Multiple	2.3
Maintain self-sustaining populations of Lake Whitefish within the range of abundance observed during 1990-99.	Conduct surveys to determine Lake Whitefish population status and trends.	Multiple	2.3
	Protect embayments and the nearshore areas which provide habitat for developing larvae and juveniles.	Multiple	2.3
	Protect nearshore areas used by adult Lake Whitefish for foraging and spawning.	Nearshore Zones and Reefs	2.3
	Restore where feasible documented river-spawning populations.	Tributaries & Watersheds	2.3
Restore and protect self-sustaining Brook Trout populations in as many of the original, native habitats as is practical.	Identify priority Brook Trout habitats using FishVis (a regional decision support tool for identifying vulnerabilities of riverine habitat and fishes to climate change) and Ecological Limits of Hydrologic Alteration (ELOHA) tools.	Multiple	2.3
	Establish forested riparian areas for shade and long term wood recruitment.	Tributaries & Watersheds	2.3
Identify and protect Species at Risk within the Beaver-Lester region.	Investigate forestry management practices in the region and look for how current pine management may be affecting the Northern Blue Butterfly population.	Coastal Terrestrial	2.3
	Conduct biodiversity studies and develop species of local conservation interest (SLCI) rankings for all faunal groups.	Multiple	2.7
Gain a greater understanding of aquatic and terrestrial invertebrate groups.	Inventory all major groups of aquatic and terrestrial invertebrates, starting with species of concern, map their distribution, and develop conservation plans for each group.	Multiple	2.7
Prevent net loss of Wild Rice in the Beaver-Lester region.	Develop and implement a strategy to protect Wild Rice habitat in the Beaver-Lester watersheds from industrial impacts.	Multiple	2.3

Regional Objective	Next Step	Conservation Target	Primary Lakewide Strategy ⁱ
	Have a standardized method for monitoring Wild Rice in the region. Consider using methods developed by the Region 5 Manoomin project and the 1854 Treaty Authority.	Multiple	2.7
Gain a greater understanding of Moose and why their populations are declining.	Conduct research on population movement, habitat, abundance, mortality rates, and vulnerability to climate change.	Coastal Terrestrial	2.7
Restore and protect self-sustaining Moose populations.	Ensure critical upland and wetland habitats, browse areas, and travel corridors for Moose are identified in forestry management plans, have consistent management amongst responsible agencies, and are protected.	Coastal Terrestrial	2.3
Increase people’s awareness of land development policy that favors native and rare insect species.	Start planning at the county level in the region with the Planning and Community Development Departments.	Multiple	2.2
Restore and protect long-lived conifers as a component in forest native plant communities as opposed to conifer plantations.	Coordinate with land management agencies within the region (county, state, federal, tribal) and identify potential areas for protection and restoration.	Coastal Terrestrial	2.2
Lakewide Strategy 3: Reduce the impact of existing aquatic invasive species and prevent the introduction of new ones.			
<i>Common Actions For All Region Plans</i> Control high priority infestations of aquatic invasive species, including continued control of Sea Lamprey.		Multiple	3.2
Prevent the introduction and spread of aquatic invasive species in the Beaver-Lester region.	Educate people about best management practices to prevent the spread of aquatic invasive species using Stop Aquatic Hitchhikers! TM , Habitattitude TM and other available materials.	Multiple	3.11
	Continue conducting ballast water inspections on at least 25% of all vessels, with emphasis on conducting inspections on vessels previously not inspected.	Multiple	3.8
	Develop a financially feasible and effective ballast water treatment system that utilizes a multi-treatment approach to prevent and reduce transport of viable organisms in ballast water and ballast sediments.	Multiple	3.8

Regional Objective	Next Step	Conservation Target	Primary Lakewide Strategy ⁱ
	Support partnerships between public and academic organizations to research ballast treatment systems.	Multiple	3.8
Lakewide Strategy 4: Adapt to climate change.			
<i>Common Actions For All Region Plans</i> Incorporate climate change model projections and adaptive management measures into natural resource management plans.		Multiple	4.1
Gain a greater understanding of habitat and species vulnerabilities and management options due to climate change in the Beaver-Lester region.	Conduct a climate change vulnerability assessment for the region to identify threats to biodiversity so adaptive management can develop.	Multiple	4.13
Gain a greater understanding of how climate change will affect native and non-native species in the Beaver-Lester region.	Support adaptation research that maintains landscape ecological function.	Multiple	4.13
Gain a greater understanding of habitat and species climate change vulnerabilities and management options in the inshore and nearshore.	Develop fine scale modeling of current and wave action that allow us to predict and better understand potential effects of climate change on water quality.	Multiple	4.12
	Identify areas of the nearshore, coastal zone, and estuary that are vulnerable to eutrophication.	Multiple	4.13
	Utilize existing forest ecosystem climate change vulnerability report recommendations in project planning.	Tributaries & Watersheds	4.1
Gain a greater understanding of herptile habitat, species vulnerabilities, and management options due to climate change.	Conduct a vulnerability assessment for the Mink Frog, Wood Frog, Pickerel Frog, Spotted, Red-backed and Blue-spotted Salamanders, and Northern Ringneck Snake.	Tributaries & Watersheds	4.13
	Identify and determine management options for projected range expansions of herptile species.	Multiple	4.1
Mitigate the contribution of greenhouse gases to the environment.	Work with industry to evaluate and identify ways to reduce carbon footprint in everyday operations.	Tributaries & Watersheds	4.7
Implement adaptation actions to account for changes in variability and/or frequency in air and water temperatures, water levels, storm events,	Replace inadequate road and stream crossings in vulnerable watersheds; ensure they can sustain at least a 100-year flow event.	Tributaries & Watersheds	4.2

Regional Objective	Next Step	Conservation Target	Primary Lakewide Strategy ⁱ
droughts, etc.	Identify and manage travel corridors to allow for species shifts, with emphasis on connecting large blocks of natural habitat.	Multiple	4.2
Develop and implement a long term climate change monitoring strategy.	Identify and monitor priority stream gauge stations to track how discharge and temperature could be changing with respect to climate change.	Multiple	4.11
	Identify and monitor priority watersheds to measure nutrient and sediment loading.	Multiple	4.11
Lakewide Strategy 5: Reduce the negative impacts of dams and barriers by increasing connectivity and natural hydrology between the lake and tributaries.			
<p><i>Common Actions For All Region Plans</i></p> <p>Address barriers to fish passage created by dams, hydroelectric generation, or misplaced or wrong sized culverts.</p> <p>Maintain flows and water levels on managed streams, rivers and lakes that emulate natural conditions (i.e., magnitude, duration, timing, and pattern).</p>		Tributaries & Watersheds	5.2
Lakewide Strategy 6: Address other existing and emerging threats that may impact important habitat or native plant and animal communities.			
Prevent the invasion and spread of the invasive Emerald Ash Borer (EAB) in the Beaver-Lester region.	Follow USDA and MN Dept. of Agriculture protocols and perform early detection monitoring for EAB in high risk areas throughout the regional unit such as travel corridors and camping areas.	Coastal Terrestrial	6.7
	Conduct research to find a suitable tree species to fill the ecological niche of Ash Trees.	Coastal Terrestrial	6.5
Prevent the introduction and spread of the invasive Gypsy Moth in the Beaver-Lester region.	Follow USDA and MN Dept. of Agriculture protocols to Survey for new Gypsy Moth infestations in high risk areas (e.g. travel corridors) and monitor current infestations to inform future management decisions (e.g. gypsy moth quarantines).	Coastal Terrestrial	6.7

Regional Objective	Next Step	Conservation Target	Primary Lakewide Strategy ⁱ
Prevent the introduction and spread of invasive species in the Beaver-Lester region.	Standardize invasive species inventory and monitoring techniques across agencies and geography so data is compatible and develop a central hub or web page.	Multiple	6.8
	Build concern and understanding of the connections between invasive species management and Lake Superior health and work with private landowners to educate, manage, and restore invasive species sites.	Multiple	6.7
Conduct construction and industrial operations using best practices and with regard to important habitat and species in the Beaver-Lester region.	Identify areas downstream of industrial operations that are not meeting water quality standards and work with regulatory agencies to ensure that contaminated source water is captured and treated before discharging.	Multiple	6.1
	Ensure Cumulative Impacts Assessments are conducted during regulatory review of proposed projects using methods established under the National Environmental Policy Act (NEPA). Assessments need to include impacts to natural and cultural resources from other past, present, and reasonably foreseeable projects in the Beaver-Lester region.	Multiple	6.1
	Ensure environmental review of existing and proposed mining, gas/oil pipelines, and other industrial projects adequately identify natural and cultural resources in areas of potential effect and identify alternatives that help avoid those impacts.	Multiple	6.1
Identify and evaluate the threat of oil spills on biodiversity.	Apply the Environmental Sensitivity Index Shoreline Atlas to biodiversity.	Multiple	6.2
Protect the habitats of biological significance with special consideration of land use impacts on water quality of lakes and tributaries.	Identify critical/vulnerable water resources and promote the use of environmentally sound best management practices to protect these resources.	Multiple	6.6
	Improve understanding of the potential effects of pharmaceuticals and personal care products (e.g. microplastics) on biodiversity.	Multiple	6.9

Regional Objective	Next Step	Conservation Target	Primary Lakewide Strategy ⁱ
Identify, evaluate, and manage threats to biodiversity from agricultural chemical and biological controls.	Assess impacts associated with agricultural chemicals (e.g. phosphorus loading) and biological controls (e.g. non-native ladybugs) and develop strategies to address those impacts.	Multiple	6.6

Regional Plan Development

Regional Plans are informed by a technical assessment, including maps of: 1. Coastal and Watershed Features; 2. Condition, and; 3. Important Habitat Sites. This information is available at: www.natureconservancy.ca/superiorbca.

The public and stakeholders who are connected to these areas provided input to the Next Steps in each Regional Plan. Oversight was provided by a Steering Committee from the Lake Superior Partnership. All input was considered and incorporated whenever possible and when relevant to a lakewide biodiversity conservation targets and threats. To contribute an update to this Regional Plan, please contact superiorplans@glncpo.net.

Existing Plans

Other existing plans relevant to conserving habitats and species in this region include but are not limited to:

- Great Lakes Fishery Commission - Fish-community objectives and Lake Trout restoration, Brook Trout rehabilitation and Lake Sturgeon rehabilitation plans for Lake Superior
- Lower St. Louis River Habitat Plan
- Minnesota Department of Natural Resources state plans - Fisheries Management Plan for the Minnesota Waters of Lake Superior, Management Plan for Invasive Species, Moose Research and Management Plan, Biological Survey Ecological Evaluations, State Wildlife Action Plan, Subsection Forest Resource Management plans, Individual Stream Management plans, Climate Change and Renewable Energy: Management Foundations
- Minnesota Pollution Control Agency - Minnesota Watershed Restoration and Protection Strategies
- St. Louis River Remedial Action Plan
- Wild Rice Restoration Implementation Plan for the St. Louis River Estuary

ⁱ To access the full Biodiversity Conservation Strategy, other Regional Plans and supporting technical information and maps, please visit the project website: www.natureconservancy.ca/superiorbca.